Dual N-Channel 30-V (D-S) MOSFET

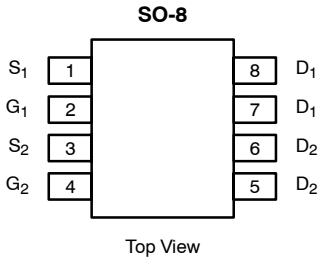
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.022 @ V_{GS} = 10 V	7.5
	0.030 @ V_{GS} = 4.5 V	6.5

FEATURES

- Trench FET® Power MOSFET
- PWM Optimized
- 100% R_g Tested

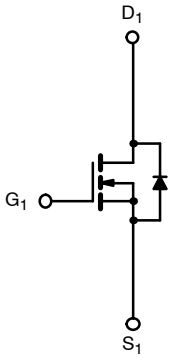
APPLICATIONS

- Symmetrical Buck-Boost DC/DC Converter

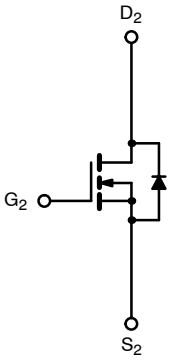


Top View

Ordering Information: Si4804BDY—E3 (Lead Free)
Si4804BDY-T1—E3 (Lead Free with Tape and Reel)



N-Channel MOSFET



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	7.5	5.7	A
	T_A = 70°C		6.0	4.6	
Pulsed Drain Current		I_{DM}	30		
Continuous Source Current (Diode Conduction)[a]		I_S	1.7	0.9	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.0	1.1	W
	T_A = 70°C		1.3	0.7	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	−55 to 150		°C

THERMAL RESISTANCE RATINGS					
			Limits		
Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient[a]	t ≤ 10 sec	R_{thJA}	52	62.5	°C/W
	Steady-State		93	110	
Maximum Junction-to-Foot (Drain)	Steady-State	R_{thJF}	35	40	

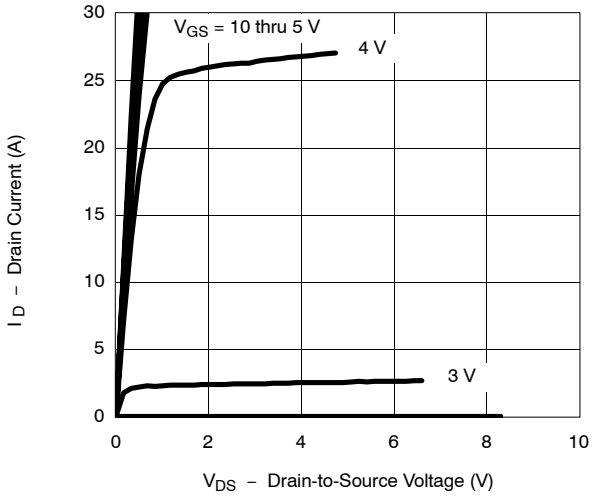
Notes
a. Surface Mounted on 1" x 1" FR4 Board.

MOSFET SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED).							
Parameter	**Symbol**	**Test Condition**		**Min**	**Typ[a]**	**Max**	**Unit**
Static							
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA		0.8		3.0	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V				±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V				1	μA
		V_{DS} = 30 V, V_{GS} = 0 V, T_J = 85°C				15	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V		20			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 7.5 A			0.017	0.022	Ω
		V_{GS} = 4.5 V, I_D = 6.5 A			0.024	0.030	
Forward Transconductance[b]	g_{fs}	V_{DS} = 15 V, I_D = 7.5 A			19		S
Diode Forward Voltage[b]	V_{SD}	I_S = 1 A, V_{GS} = 0 V			0.75	1.2	V
Dynamic[a]							
Total Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 7.5 A			7	11	nC
Gate-Source Charge	Q_{gs}				2.9		
Gate-Drain Charge	Q_{gd}				2.5		
Gate Resistance	R_g			0.5	1.5	2.6	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 15 V, R_L = 15 Ω I_D ≅ 1 A, V_{GEN} = 10 V, R_g = 6 Ω			9	15	ns
Rise Time	t_r				10	17	
Turn-Off Delay Time	$t_{d(off)}$				19	30	
Fall Time	t_f				9	15	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 1.7 A, di/dt = 100 A/μs	Ch-1		35	55	

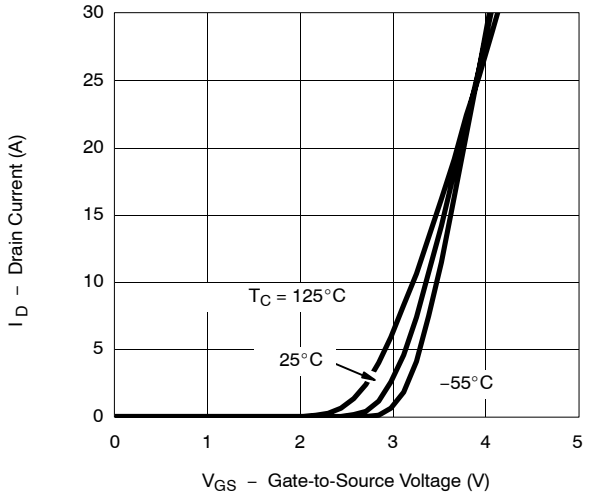
Notes
a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

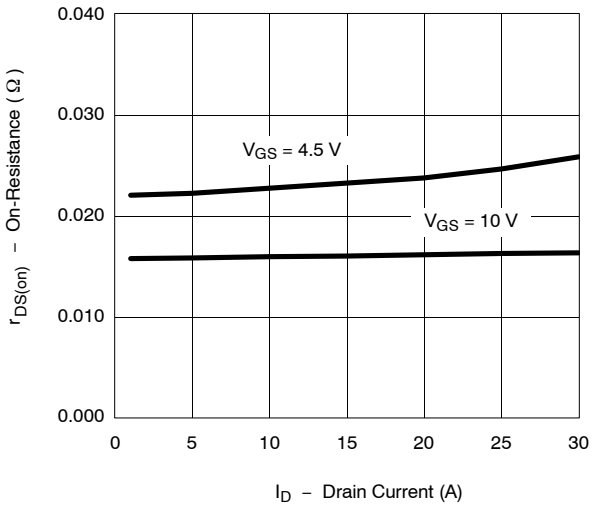
Output Characteristics



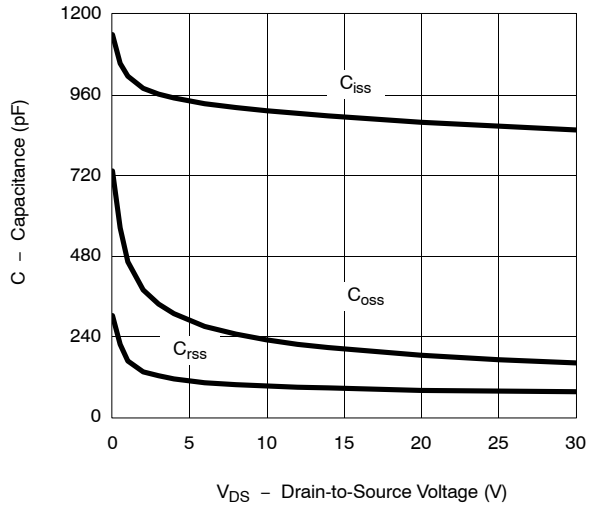
Transfer Characteristics



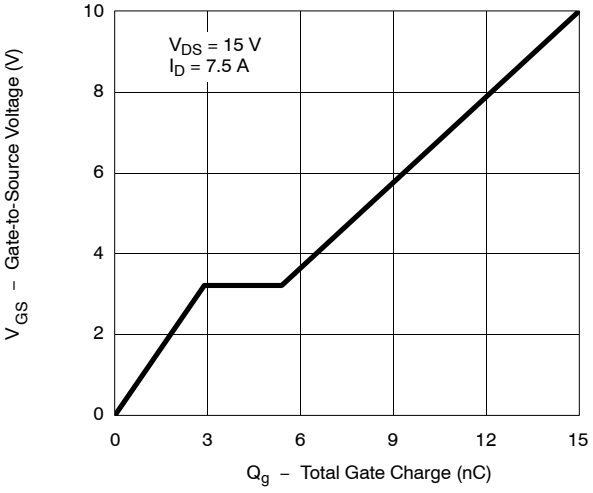
On-Resistance vs. Drain Current



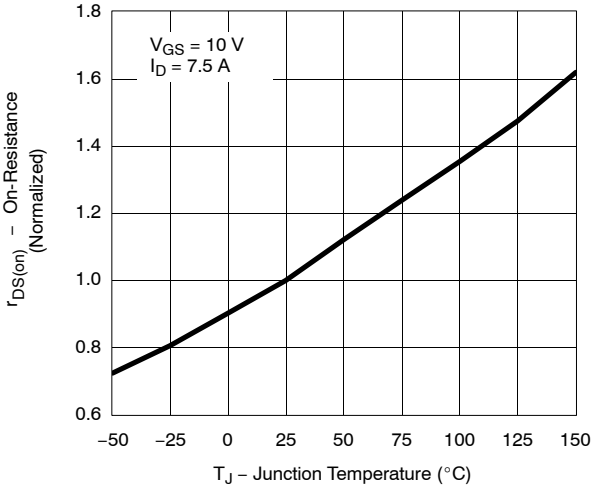
Capacitance



Gate Charge

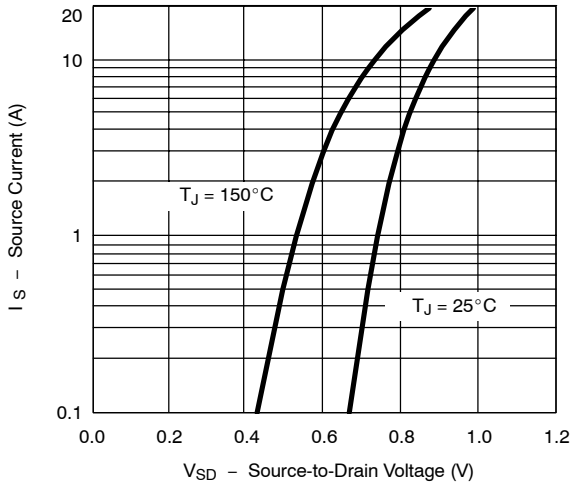


On-Resistance vs. Junction Temperature

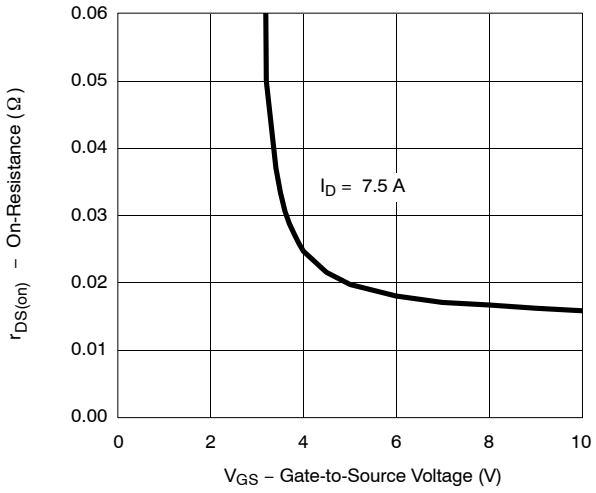


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

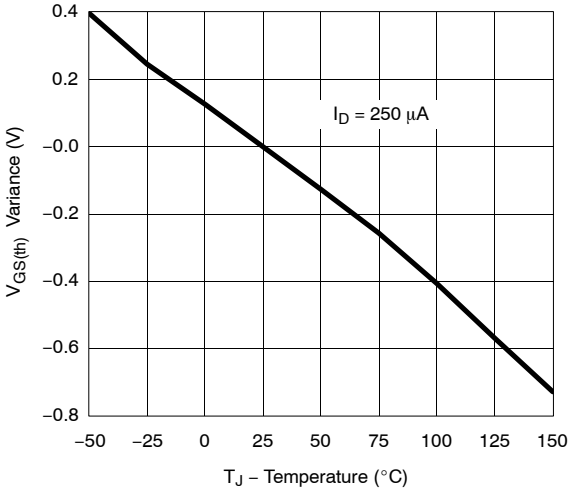
Source-Drain Diode Forward Voltage



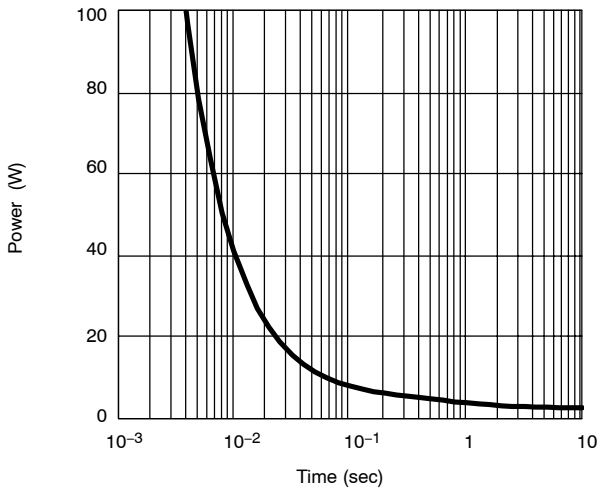
On-Resistance vs. Gate-to-Source Voltage



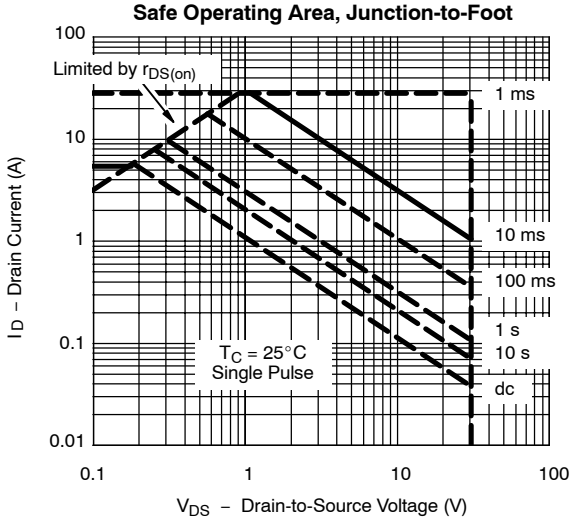
Threshold Voltage



Single Pulse Power, Junction-to-Ambient

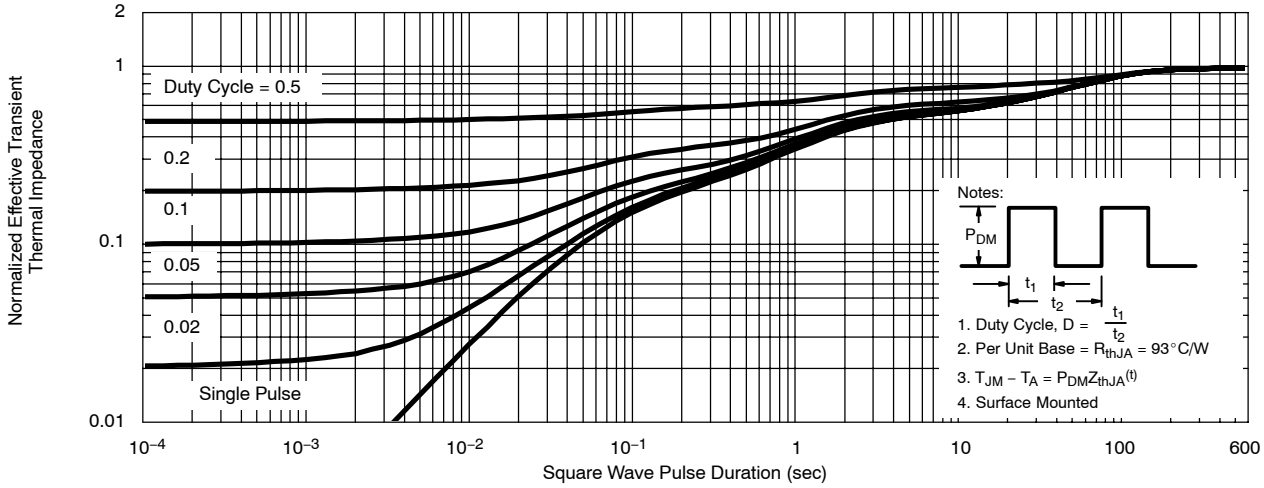


Safe Operating Area, Junction-to-Foot



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

